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ABSTRACT

This document reports on comparative salaries for men and women at Washburn University of Topeka, Kansas. A standard multiple linear regression equation was developed from data supplied. Using the factors of years at Washburn, degree, and rank, a "line of best fit" formula was developed which would predict a salary that could be anticipated based on the Washburn pay schedule for the 1971-72 year for full time teaching, male faculty members. The resulting parameters were applied to women's salaries. Neither study indicated that the single factor of sex is a factor in determining salaries. A more significant finding was the revelation that some individual salaries, both male and female, were significantly at variance for the "line of best fit." (Author/MJM)

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REPORT ON COMPARATIVE SALARIES FOR MEN AND WOMEN AT WASHBURN UNIVERSITY OF TOPEKA

Last fall the American Association of University Women, Kansas Division, requested that Washburn University develop a model for a comparison survey of faculty salaries by sex. Working with Terry D. McAdam, Associate Professor of Mathematics, and Homer Sykes, of the Computer Department, a standard multiple linear regression equation was developed from data supplied. Other models were considered, but this seemed to be the most useful.

A less sophisticated study of the salaries the year before had shown inconclusive results. We found no significant correlation between curricular types and salary increments. Meaningful generalizations relative to the variable of sex in salary were also hard to make. This is perhaps best illustrated by the correlations relative to 1970 and 1969 salaries and sex which were of low or no significance at -0.305 and -0.252 respectively. Specifically, the minimum and maximum salaries for male Professors were both higher and lower than that of women although the median salary for men was $474.00 less than women. The Associate Professor level found the same maximum salary, lower median salary for women, and high minimum salary for women. On the Assistant Professor level the men led in all categories. But on the Instructor level women had higher maximum and median salaries but lower minimum. A chart of the matrix correlation of that study is attached.

Finding this evidence hard to interpret, we decided to find "a line of best fit." That is to say, using the factors of years at Washburn, degree and rank we developed a formula which would "predict" a salary that could be anticipated based on Washburn pay schedule for the 1971-72

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year for full-time teaching, male faculty members. Administrators, coaches and librarians, both male and female, were excluded from consideration in this study. The formula relating to annual salary was:

$$\text{Salary} = a_0 + a_1 x \text{ years} + a_2 x \text{ degree} + a_3 x \text{ rank}$$

Eighty-one males were in the study. The "line" of best fit resulted in parameters as follows:

$$a_0 = 6360.806$$
$$a_1 = 5.597$$
$$a_2 = 522.145$$
$$a_3 = 1459.756$$

When applied to women's salaries, it was found that twelve of the thirty women were above the "line of best fit." It would be necessary to have fewer than ten or more than twenty to be statistically significant. Or another way to put it, it would be necessary to have more than twenty below the "line" to be significantly lower than men at a 5% level of significance. In testing the hypothesis that the probability is 0.5 that a randomly selected salary is above or below the "predicted" salary, the data are not sufficient to assume that these results did not simply occur by accident.

Neither study would indicate that the single factor of sex is a factor in determining salaries. A more significant finding was the revelation that some individual salaries, both male and female, were significantly at variance from the "line of best fit." This is certainly the kind of input into salary considerations that an administrator can use with some sense of objectivity.

-- C. Robert Haywood
August 31, 1971

Matrix Correlation on All Categories for the University

Var. 1	Var. 2	R
Degree	Tenure	+0.156
Degree	Rank	+0.606
Degree	Curricular Type	-0.035
Degree	Sex	-0.144
Degree	Salary - 69	+0.614
Degree	Salary - 70	+0.610
Degree	Percent Increase	-0.010
Degree	Student Evaluation	-0.002
Degree	Role	+0.256
Tenure	Rank	+0.633
Tenure	Curricular Type	+0.004
Tenure	Sex	+0.162
Tenure	Salary - 69	+0.435
Tenure	Salary - 70	+0.441
Tenure	Percent Increase	-0.099
Tenure	Student Evaluation	+0.012
Tenure	Role	+0.350
Rank	Curricular Type	+0.003
Rank	Sex	-0.116
Rank	Salary - 69	+0.821
Rank	Salary - 70	+0.832
Rank	Percent Increase	-0.036
Rank	Student Evaluation	+0.031
Rank	Role	+0.440
Curricular Type	Sex	-0.038
Curricular Type	Salary - 69	+0.032
Curricular Type	Salary - 70	+0.050
Curricular Type	Percent Increase	+0.294
Curricular Type	Student Evaluation	+0.097
Curricular Type	Role	+0.044
Sex	Salary - 69	-0.305
Sex	Salary - 70	-0.252
Sex	Percent Increase	+0.016
Sex	Student Evaluation	-0.112
Sex	Role	-0.066
Salary - 69	Salary - 70	+0.991
Salary - 69	Percent Increase	-0.051
Salary - 69	Student Evaluation	+0.032
Salary - 69	Role	+0.466
Salary - 70	Percent Increase	+0.023
Salary - 70	Student Evaluation	+0.051
Salary - 70	Role	+0.478
Percent Increase	Student Evaluation	+0.148
Percent Increase	Role	-0.025
Student Evaluation	Role	+0.003